Table S1. Genes upregulated more than 5-fold and with corrected p-values <0.05, following a 15-minute shock with 5 mM Fe(II) and approximately 260 nM copper.

Gene Locus	Annotation	Fold-change
Rpal_1060	hypothetical protein	208.7
Rpal_1062	putative exported protein of unknown function	203.0
Rpal_1071	hypothetical protein	156.5
Rpal_1070	hypothetical protein	151.7
Rpal_1057	F0F1 ATP synthase subunit beta	104.0
Rpal_1058	RNA polymerase sigma factor	71.0
Rpal_1605	putative exported protein of unknown function	60.5
Rpal_1064	putative membrane protein of unknown function	54.8
Rpal_1857	protein of unknown function DUF156	43.3
Rpal_1604	efflux transporter, RND family, MFP subunit	43.0
Rpal_1056	F0F1 ATP synthase subunit epsilon	41.4
Rpal_1047	outer membrane efflux protein	40.4
Rpal_1089	hypothetical protein	37.0
Rpal_2016	RNA polymerase sigma factor	36.5
Rpal_1072	heavy metal translocating P-type ATPase	33.7
Rpal_2140	protease Do	31.0
Rpal_1055	F0F1-ATPase subunit	30.7
Rpal_2344	outer membrane efflux protein	28.8
Rpal_1059	protein of unknown function DUF1109	28.3
Rpal_2017	protein of unknown function DUF1109	26.0
Rpal_4973	efflux transporter, RND family, MFP subunit	25.5
Rpal_0153	GCN5-related N-acetyltransferase	24.8
Rpal_1091	multicopper oxidase type 3	22.2

Rpal_1090	outer membrane efflux protein	20.7
Rpal_1073	hypothetical protein	18.4
Rpal_4604	methionine sulfoxide reductase A	15.6
Rpal_2345	efflux transporter, RND family, MFP subunit	15.4
Rpal_1046	efflux transporter, RND family, MFP subunit	14.9
Rpal_4085	hypothetical protein	12.8
Rpal_0028	phospho-2-dehydro-3-deoxyheptonate aldolase	12.2
Rpal_1054	hypothetical protein	12.0
Rpal_1856	heavy metal translocating P-type ATPase	11.8
Rpal_0222	hypothetical protein	10.7
Rpal_3672	30S ribosomal protein S12	10.6
Rpal_1247	quinolinate synthetase	10.4
Rpal_2298	outer membrane efflux protein	9.8
Rpal_2263	putative exported protein of unknown function	9.3
Rpal_2814	pentapeptide MXKDX repeat protein	9.0
Rpal_3879	hypothetical protein	8.8
Rpal_1053	F0F1 ATP synthase subunit A	8.6
Rpal_1603	heavy metal efflux pump, CzcA family	8.4
Rpal_1068	RNA polymerase sigma factor	8.1
Rpal_2343	hypothetical protein	7.9
Rpal_0242	50S ribosomal protein L19	7.1
Rpal_0966	dihydrodipicolinate synthase	6.7
Rpal_3671	30S ribosomal protein S7	6.7
Rpal_1052	F0F1 ATP synthase subunit C	6.5
Rpal_1093	hypothetical protein	6.3
Rpal_1747	ribulose bisophosphate carboxylase	6.3
Rpal_4459	methionine sulfoxide reductase B	6.3

Rpal_0934	GreA/GreB family elongation factor	6.3
Rpal_2141	two component transcriptional regulator, winged helix family	6.2
Rpal_2299	efflux transporter, RND family, MFP subunit	6.2
Rpal_2992	hypothetical protein	6.0
Rpal_1662	hypothetical protein	5.8
Rpal_4684	hypothetical protein	5.8
Rpal_1039	Integrase catalytic region	5.8
Rpal_3679	heavy metal translocating P-type ATPase	5.7
Rpal_3083	hypothetical protein	5.7
Rpal_4799	hypothetical protein	5.5
Rpal_0936	hypothetical protein	5.5
Rpal_1092	blue (type 1) copper domain protein	5.5
Rpal_0223	oxidoreductase molybdopterin binding	5.4
Rpal_1051	H+transporting two-sector ATPase B/B' subunit	5.4
Rpal_5052	protease Do	5.1
Rpal_4790	phosphoserine aminotransferase	5.1
Rpal_3619	hypothetical protein	5.0
Rpal_4711	hypothetical protein	5.0
Rpal_2057	transcriptional regulator, MucR family	4.8
Rpal_0612	hypothetical protein	4.7
Rpal_0439	ribosome-binding factor A	4.7
Rpal_1207	transcriptional regulator, PadR-like family	4.6
Rpal_4666	Integral membrane protein TerC	4.6
Rpal_2769	FMN-binding negative transcriptional regulator	4.6
Rpal_1748	Ribulose-bisphosphate carboxylase	4.5
Rpal_2286	cation diffusion facilitator family transporter	4.5
Rpal_0038	phenylalanyl-tRNA synthetase, alpha subunit	4.4

Rpal_4606	transcription elongation factor GreA	4.3
Rpal_0938	Ornithine decarboxylase	4.3
Rpal_3880	hypothetical protein	4.3
Rpal_3240	hypothetical protein	4.3
Rpal_3487	30S ribosomal protein S6	4.2
Rpal_1069	protein of unknown function DUF1109	4.2
Rpal_1574	sulfatase	4.2
Rpal_2294	flagellar basal body rod protein	4.1
Rpal_2242	acetolactate synthase 3 catalytic subunit	4.0

Figure S1. Abiotic reduction of Cu(II) by Fe(II) and ascorbate. 30 µM Cu(II) was added to fresh water medium under anoxic conditions. 100 µM of either Fe(II) or ascorbate was added to the mix, and samples were taken at appropriate intervals and tested for Cu(I) accumulation with the bathocuproine assay as described in the methods. Lines depict the averages of two experiments, shown as individual points.

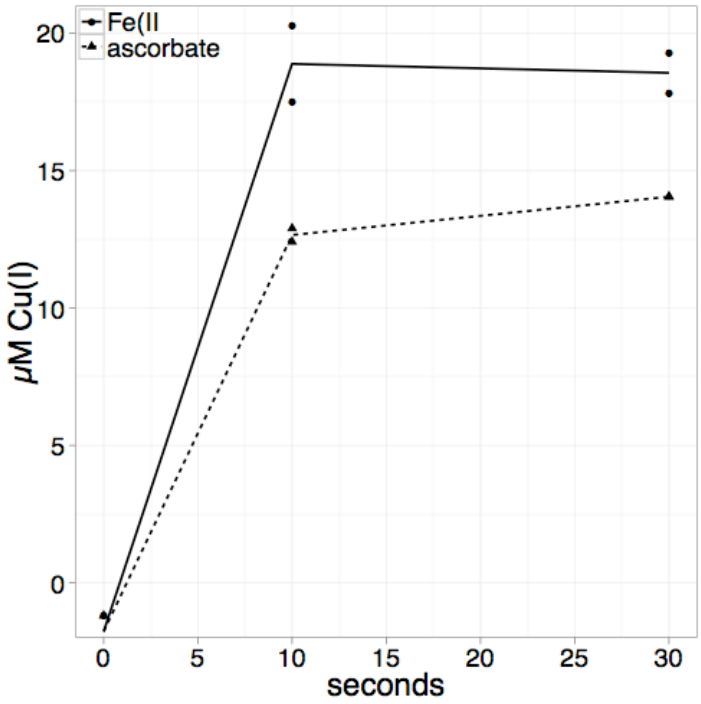

Table S2 Primers used in this study.

Primer name	Primer sequence	Amplicon length	Primer description
recA qRT-PCR Rev	GAATTCGACCTGCTTGAACG	99	Forward primer for Rpal_4376 (*recA*)
recA qRT-PCR Rev	GAATTCGACCTGCTTGAACG		Reverse primer for Rpal_4376 (*recA*)
clpX qRT-PCR For	GGAGATCTGCAAGGTTCTCG	91	Forward primer for Rpal_3308 (*clpX*)
clpX qRT-PCR Rev	CCGCTTGTAGTGATTGTGGA		Reverse primer for Rpal_3308 (*clpX*)
ATP synthase Set 1 For	TCACGTCAATGGGAACGGTGGTAT	104	Forward primer for Rpal_1057 (*atpD* homologue)
ATP synthase Set 1 Rev	CCATTCGACGATCAAGCCGGTATT		Reverse primer for Rpal_1057 (*atpD* homologue)
Rpal1091 Set 2 For	GGTTTGACTCAGCCGCACATCAAT	118	Forward primer for Rpal_1090 (multicopper oxidase)
Rpal1091 Set 2 Rev	CCATCGCCATTTGGACCATTTCGT		Reverse primer for Rpal_1090 (multicopper oxidase)
Rpal2141 Set 1 For	ATCAGAGCCCGCAGAGTTTGAAGA	103	Forward primer for Rpal_2141 (*cusR* homologue)
Rpal2141 Set 1 Rev	TCGCGAAACGCCTTGACCAGATA		Reverse primer for Rpal_2141 (*cusR* homologue)
Rpal1072 Set 1 For	ACCTTATCGCTGGTCATGGTTGGA	139	Forward primer for Rpal_1072 (p-type ATPase)
Rpal1072 Set 1 Rev	TTGAGGTTTCGGCTCAGGATGGAT		Reverse primer for Rpal_1072 (p-type ATPase)
Rpal1857 FWD Set 2	TCTCCAAGATGGTGGAGGAG	116	Forward primer for Rpal_1857 (*csoR* homologue)
Rpal1857 REV Set 2	ATGCGCGACGTGATCTTT		Reverse primer for Rpal_1857 (*csoR* homologue)
Rpal3680 FWD Set 2	GGTCGAAACCATCCGGTATTA	119	Forward primer for Rpal_3680 (*cueR* homologue)
Rpal3680 REV Set 2	CGCGACGGATGAAGCTAA		Reverse primer for Rpal_3680 (*cueR* homologue)
Rpal1856 Set 1 For	AGCAAGCATCGCTTTGCCTACAAG	159	Forward primer for Rpal_1856 (p-type ATPase)
Rpal1856 Set 1 Rev	ATCCATTGGGCAGGTGTAGATGGT		Reverse primer for Rpal_1856 (p-type ATPase)
Rpal3679 FWD Set 1	CGAAAACGACTGCCATGGTG	95	Forward primer for Rpal_3679 (p-type ATPase)
Rpal3679 REV Set 1	AAGAGCTGCGATAAGGCGAA		Reverse primer for Rpal_3679 (p-type ATPase)